SOCIAL SECURITY BENEFITS AS A SOURCE OF RETIREMENT RESOURCES FOR U.S. NEAR-RETIREES

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Summary

This paper analyzes Social Security benefits as a source of retirement resources (wealth and income) for U.S. near-retirees. It looks at how the average values of several measures of benefits have changed from earlier cohorts to today's near-retiree cohort. The paper also examines differences among demographic and socioeconomic groups within cohorts. We discuss reasons for these changes and differences.

Our work relies primarily on actual earnings history data to examine Social Security benefits as a source of retirement resources. The dataset consists of Social Security Administration administrative earnings and benefit history records exact-matched to data from the 1990-93 panels of the Survey of Income and Program Participation. We use that improved information to produce more accurate measures of Social Security benefits than those previously available.

The paper looks at persons born during the 1927-1946 period. One reason for selecting these birth-year cohorts is that these persons are not likely to be markedly affected by possible future cuts in benefits. We construct a set of benefit measures to track trends in Social Security wealth and income, and to evaluate the extent of earnings replacement.

We find that :

- average Social Security wealth and average annualized benefit payouts increase markedly as we move from earlier to later near-retiree 'cohorts' primarily due to increases in average real wage-indexed taxable earnings.

- taxable earnings replacement rates decrease as we move from the 1993 'cohort' (persons age 57-61 in 1993) to later 'cohorts' primarily due to the phase-in of increases in the age at which persons can receive full Social Security benefits.

- for the not-married (at age 62) median Social Security wealth is much higher for women than for men, but median annualized benefit payout is substantially lower for women. This reversal of positions is due to the greater longevity of women.

- the 1998-2003 percentage increases in median annualized benefit payouts rise consistently from the lowest quintile of average wage-indexed earnings to the highest quintile due primarily to the pattern of differences in earning growth by quintiles.

Introduction

Social Security benefits are the major source of retirement resources (wealth and income) for U.S. retirees. In 2001, 65 percent of aged beneficiaries (65 and older) received at least half of their income from Social Security benefits, while for 20 percent of aged beneficiaries, Social Security was their *only* source of income.[1] These benefits are especially important for low earners and for certain population subgroups, e. g., widowed women. Moreover, benefits are now almost universal. The proportion of the aged population receiving Social Security benefits rose from 69 percent in 1962 to 91 percent in 2001.

This paper analyzes Social Security benefits as a source of retirement resources for today's near-retirees and for earlier cohorts of near-retirees. It looks at near-retirees (i.e., 61 year olds) of 1988-2007. It examines how the average values of several measures of benefits (Social Security wealth, annualized benefit payout, and earnings replacement rates) have changed from earlier cohorts to today's near-retiree cohort. We address questions such as the following: Is there a trend in the growth of Social Security wealth? Is there a trend in earnings replacement rates? The paper also examines how within a cohort average values of these benefit measures differ among sex-marital and earnings quintile subgroups and how these subgroup values have changed from early cohorts to today's near-retiree cohort. We address the following questions: What sex-marital status subgroups have the highest Social Security wealth? What sex-marital status subgroups have the highest replacement rates? How has the progressivity of Social Security benefits changed from early cohorts to later cohorts? We look at some reasons for these changes and differences, and discuss the effects of earnings, marital behavior, longevity, and Social Security program provisions on these Social Security benefit measures. We hope our findings will be of help in understanding the economic well-being of the aged and in developing proposals to improve the Social Security program.

Other studies have examined the retirement resources of near-retirees.[2] Often these studies focus on other types of retirement resources, i.e., private pension and private asset wealth. Those that include Social Security estimates often are plagued by serious

[1] Social Security Administration (2003).
[2] See Wolff (2001), Engen et al (2000), Bernheim (1993), and CBO (1993) among others.

data problems, especially inaccurate estimates of Social Security benefits over the period of benefit receipt. Benefit estimates based on inaccurate earnings estimates are often used to evaluate this component of total retirement wealth. Wolff (2001), for example, estimates lifetime earnings based on a single year of earnings which in turn are used to calculate the Social Security retirement wealth of near-retirees. He finds that Social Security wealth of 47-64 year olds increased during the period of 1989-1998 but declined during 1983-98.

Three recent studies-Butrica et al (2003), Smith (2003), and Smith et al (2003/2004)-use improved data to study future retirement incomes. The focus of each of these studies is rather different from that of our study. Butrica et al (2003) examine many forms of retirement and non-retirement income for persons born during 1926-1965; their study focuses on baby boomers. Smith (2003) examines many forms of retirement and nonretirement income for persons born during the 1931-1975 period and focuses on how earnings inequality may translate into retirement income inequality. Smith et al (2003/2004) focus on the net redistributive effects of Social Security for birth cohorts ranging from 1931 to 1960.

The purpose of this paper is to provide an in-depth examination of Social Security benefits for a specific group of the retiree population, namely recent near-retirees and those who can expect to retire in the very near future. We compute a variety of benefit measures that have not been used in previous studies. We rely primarily on actual earnings history data to examine Social Security benefits as a source of retirement income for near-retirees. The use of observed earnings histories allows us to capture the large variation in these histories, unlike methods that estimate earnings histories based on a single earnings equation. The paper makes use of the MINT3 datafiles. (See below for more details.) The MINT datafiles include Social Security Administration (SSA) administrative earnings and benefit history records exact-matched to the 1990-93 panels of the Survey of Income and Program Participation. Because of the extensive content of our dataset, we are able to make considerably less use of imputations and projections than do a number of other studies of the subject. Where imputations and projections were required they were done by MINT modelers using sophisticated methods. Thus, this paper attempts to produce with the use of improved data more accurate measures of

Social Security benefits. Our results suggest that Social Security wealth increased considerably faster than shown by Wolff.

The paper looks at persons who reached age 61 during the 1988-2007 period, i.e., persons born during the 1927-1946 period; one reason for selecting these birth-year cohorts is that these persons are not likely to be markedly affected by possible future cuts in benefits. We choose age 61 because 62 is the age of first eligibility for Social Security retired worker and spouse benefits.

Data Used

As stated above, for this study we use data from the Modeling Income in the Near Term (MINT) model project.[3] The MINT project is a large-scale effort that has been underway since the late 1990s. Much of the MINT work was done by SSA contractors at the Urban Institute, Rand Corporation, and Brookings Institution. The starting sample is from the 1990, 1991, 1992, and 1993 panels of the Survey of Income and Program Participation (SIPP). In this survey of the noninstitutional population, interviews were conducted once every four months for 28-36 months. The SIPP collected information on income components, wealth components, mortality, marital histories, institutionalization, immigration, various demographic and socioeconomic variables, and many other variables.

As part of the MINT project SSA administrative records were exact-matched to SIPP data for sample members born during the 1926-1965 period. These administrative records include earnings history, benefit history, and death information through 1999. Exact-matches were made for about 92 percent of these persons. Administrative records were imputed by MINT modelers for the remaining 8 percent of persons. For years after the time range of the administrative and survey data the MINT model projects dates of death, institutionalizations, marital histories, earnings, and benefits. In addition, persons are projected to enter the sample by means of immigration. These projections were designed to be generally consistent with the intermediate assumptions of the 2002 Old-

[3] We use MINT3 datafiles created in April 2003.

Age, Survivors and Disability Insurance (OASDI) Trustees Report.[4] Some additional information about MINT imputations and projections is given in Appendix A. For a detailed description of the MINT3 data, see Toder et al (2002).

The data set used in this study has notable strengths. (1) Longitudinal administrative data are available through 1999. Thus, earnings history data are available through age 53 for the youngest birth cohort analyzed (those born in 1946) and through age 72 for the oldest birth cohort (born in 1927). Benefit record information is available for the great majority of members of the eight oldest single-year cohorts (born 1927-1934) and for many members of the next three single-year cohorts (born 1935-1937). (2) The combined SIPP panels provide a quite large sample. For each of our single-year birth cohorts we have a sample of more than 1,000 persons. Studies of retirement resources of near-retirees typically use much smaller samples.

Empirical Constructs Used

'Cohorts' of Near-Retirees

This paper's unit of analysis is the person and not some larger unit, e. g., marital unit, family, etc. In studies that use longitudinal data the person is often the unit of analysis. The composition of the larger units changes over time. For example, the marital status of most persons changes one or more times during their adult lifetimes.

The paper looks at 20 single-year cohorts, i.e., those persons reaching age 61 in the 20 years from 1988 through 2007. Each single-year cohort consists of all persons who reach age 61 during that year and are members of the noninstitutional population at the end of that year, i.e., at the beginning of the year most of them can first receive Social Security retirement benefits.

In our tables we combine these single-year cohorts into four groups of five single-year cohorts each. For these 5-year groups we use the term 'cohort.' We aggregate into 'cohorts' in order to facilitate the presentation of results and to avoid small sample sizes for certain sex-marital status subgroups, e. g., widowed men. The first or oldest 'cohort' of near-retirees (the 1988 'cohort') is persons reaching ages 57-61 in 1988. The 1993,

[4] Board of Trustees (2002).

1998, and 2003 'cohorts' are persons reaching ages 57-61 in 1993, 1998, and 2003. Benefits of 'cohort' members are evaluated as of January 1 of the year they reach 62. In order to increase comparability among 'cohorts' and among subgroups within a 'cohort,' benefits of all members of a particular 'cohort' are evaluated as of the year they reach a given age (62) rather than as of a given year (e. g., 1988).

The MINT population excludes persons reaching age 61 in 1988-92 who were not eligible for SIPP interviews because after reaching age 61 they attrited from the U.S. noninstitutional population as a result of death, institutionalization, or emigration prior to the first SIPP interviews in 1990-1993. This attrition affects the size and composition of the 1988 'cohort,' but does not affect the other three 'cohorts.' Without appropriate correction for attrition bias, the benefit and earnings measures (median Social Security wealth, etc.) for the 1988 'cohort' are not totally comparable to those of the latter three 'cohorts.' This attrition is relatively small. We attempt to remove the effects of this attrition on the benefit and earnings measures for the 1988 'cohort' by the use of attrition factors and thus to make these measures comparable to the measures for the other three 'cohorts.' We compute attrition factors using data from the 1993 'cohort' of near-retirees. For a description and discussion of our attrition correction method, see Appendix B.

Benefit Measures

Our benefit concept is shared benefits. For each year a person is married, the person's shared benefit equals half the benefits received by the couple. It is our view that in such cases shared benefit is superior to individual benefit received as a measure of the income support provided to the person by the OASDI program. The individual benefits of husband and wife often are quite different. However, most married couples share their incomes. For each year a person is not married, the person's shared benefit equals the benefits received by the person.[5]

Our benefit measures (Social Security wealth, etc.) include benefits received in the years after the year the person reaches age 61. Our measures include worker, spouse,

[5] Given the content of the MINT datafile the sharing of benefit income within a larger unit (e. g., family) could not be considered.

divorced spouse, surviving spouse, and surviving divorced spouse benefits paid from the Old-Age and Survivors (OASI) and Disability Insurance (DI) trust funds.

Social Security Wealth

For each person with benefits, we compute Social Security Wealth. Social Security Wealth for each person is the present value of shared benefits evaluated as of January 1 of the year the person reaches age 62. Real Social Security Wealth (SSW) is expressed in January 1 of 2002 prices. Our annual discount rate series consists of the rates of return on OASI trust fund assets. Projected CPI-Ws (Consumer Price Index for Urban Wage Earners and Clerical Workers) and trust fund interest rates are based on the intermediate assumptions of the 2002 Trustees Report.

Annualized SSW Payout

For each person with benefits we compute an annualized SSW payout (ANNPAYOUT), which is equal to the constant real annual payment over all the person's potential benefit years that has a present value equal to the person's SSW. As with SSW, ANNPAYOUT is expressed in January 1 of 2002 prices. Potential benefit years consist of all years from the year the person reaches age 62 through the last year prior to the year of death.[6] After 1999, the year of death is that projected by the MINT model.

ANNPAYOUT, which has not been used in previous studies, is a useful measure of the average annual support provided by Social Security over the post-age 61 years.[7] ANNPAYOUT is less affected by increases over 'cohorts' or differences within 'cohorts' in longevity than is the SSW measure.[8]

[6] For the year a person begins to receive benefits the MINT benefit calculator credits the person with 12 months of benefits. For the year of a person's death the benefit calculator does not credit the person with any benefits.

[7] A somewhat similar measure is used in Smith et al (2003/04).

[8] The 'cohort' or 'cohort' subgroup with greater longevity can be said to have additional potential benefit years. Most of these additional potential benefit years will also be benefit receipt years in which the beneficiaries receive real annual benefits at least as large as they receive in their earlier years. These additional benefits result in additional SSW. To compute additional ANNPAYOUT this additional SSW is

Earnings Replacement Rates

There are a number of possible replacement rate measures. For example, replacement rates have been defined as the percent of average earnings for the last few years prior to benefit receipt that are replaced by benefits. Our replacement rates measure to what extent average career earnings are replaced by benefits. One reason we chose average career earnings for our replacement rate measures is because one goal of the Social Security program is to provide benefits that replace a portion of average career earnings. For each person with some shared earnings we calculate two earnings replacement rates, one for average wage-indexed shared taxable earnings (TX-REPRATE) and another for average wage-indexed shared "less-censored" earnings (LC-REPRATE). TX-REPRATE is somewhat like the replacement rate measure implicit in OASDI law. LC-REPRATE is our proxy for a total earnings replacement rate; it is superior to TX-REPRATE as a measure of the adequacy of Social Security benefits because its denominator is a better proxy for the person's pre-retirement standard of living. ANNPAYOUT is the numerator of each of these two replacement rates. Each of these career average earnings measures is computed from shared annual earnings amounts. For each year a person is married, the person's shared earnings equal half of the earnings of the couple. For each year a person is not married, the person's shared earnings equal the person's own earnings.

Taxable earnings (wages and self-employment income) are those below the legislated taxable maximums (the maximum amount of annual earnings included in the calculation of benefits). For each year since 1981 the legislated taxable maximum has been indexed by the SSA average annual wage series and, hence, since 1983 the ratio of the legislated taxable maximum to the average annual wage has been roughly constant at about 2.3-2.5. The ratio was 2.3-2.4 during 1983-1989 and 2.4-2.5 during the 1990s. Prior to 1982 this ratio was always below 2.3 and showed substantial variation. The ratio as 1.0-1.7 during 1951-78 and 2.0-2.2 during 1979-82.[9]

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spread over all potential benefit years. Thus, great longevity usually causes a smaller percentage increase in ANNPAYOUT than in SSW.

[9] The proportion of all workers (of any age) in covered employment with covered earnings at or above the legislated taxable maximums was 6 percent during 1983-89 and 5-6 percent during the 1990s. The percentages during 1951-78 and 1979-1982 were 15-36 and 7-10.

"Less-censored" earnings for a worker are those from employment covered by Social Security that are estimated to be below a hypothetical taxable maximum which for each year was set at about 2.45 times the average annual wage. For years prior to 1990 the MINT model projects "less-censored" earnings in excess of the legislated taxable maximums.[10] "Less-censored" earnings are superior to taxable earnings in approximating relative changes over 'cohorts' or differences within 'cohorts' among socioeconomic subgroups in total earnings.

We compute average wage-indexed earnings as follows. For each person shared taxable earnings for each year of the computation period (defined below) are indexed, using the average wage series, to wage levels as of the beginning of the year the person reaches age 62. Then these indexed earnings are averaged over the person's computation period. Finally this average is expressed in prices prevailing as of January 1, 2002 to get our measure of average wage-indexed shared taxable earnings, TX-EARN.[11] The computation period for TX-EARN begins with the year the person reaches age 22 and ends with the year the person reaches age 61. Projected average annual wages in the MINT datafile are based on the intermediate assumptions of the 2002 Trustees Report. Average wage-indexed shared "less-censored" earnings (LC-EARN) are computed in an analogous way.[12,13]

A person's TX-REPRATE is the person's ANNPAYOUT expressed as a percent of the person's TX-EARN. As stated earlier, TX-REPRATE is somewhat like the

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[10] See Appendix A and Butrica et al (2001) for general descriptions of the MINT projection method for "less-censored" earnings.

[11] Because the numerator of the replacement rate (ANNPAYOUT) is expressed in January 1, 2002 prices, we need to express the denominator of the replacement rate (TX-EARN) in January 1, 2002 prices. P_{2002} is the CPI as of January 1 of year 2002 and P_T is the CPI as of January 1 of year T. AE_T is average wage-indexed shared taxable earnings indexed to the average wage level prevailing as of January 1 of year T. T is the year the person would reach age 62.

TX-EARN = $(P_{2002} / P_T)\ AE_T$.

[12] The computation period for LC-EARN begins with the year the person reaches age 22 or the year the person immigrates to the U.S. whichever comes later, and ends with the year the person reaches age 61. Thus, except for immigrants who enter the U. S. after the year they reach age 22, the computation periods for LC-EARN are the same as those for TX-EARN.

[13] SSW is evaluated as of January 1 of the year the person reaches age 62. ANNPAYOUT, the numerator of our replacement rates, is derived from SSW. Thus, we want to wage-index LC-EARN, the denominator of LC-REPRATE, to the wage level as of the beginning of the year the person reaches age 62. Making the timing of the numerator and denominator consistent makes LC-REPRATE a better measure of the adequacy of Social Security benefits. We chose to wage-index TX-EARN to the same date as that used for wage-indexing LC-EARN.

replacement rate measure implicit in OASDI law. Under OASDI law a person's initial Monthly Benefit Amount (MBA) is determined as a percent of the person's Average Indexed Monthly Earnings[14] (AIME) and over time the person's MBA is kept constant in real terms. TX-REPRATE's numerator (ANNPAYOUT) is a constant real benefit and is related to the price-indexed Monthly Benefit Amount. TX-REPRATE's denominator (TX-EARN) is average wage-indexed taxable earnings from age 22 through age 61. TX-EARN and AIME have some similar features. LC-REPRATE is the percent of "less-censored" earnings replaced by Social Security benefits. As stated earlier, LC-EARN is our proxy for a total earnings replacement rate. TX-REPRATE and LC-REPRATE are age-62 replacement rates. They give the percentages of a person's earnings wage-indexed to January 1 of the year the person reaches age 62 that are replaced by the person's constant real annualized payout. As average real economy-wide earnings increase over a person's post-age 61 years, the person's annualized payout declines relative to average economy-wide earnings.

Results: All Social Security Program Participants

All of our results are for Social Security program participants, i.e., near-retirees with some shared earnings (with positive LC-EARNs). The very small group of nonparticipants, i.e., near-retirees with no shared earnings is excluded from this analysis. For each of the four near-retiree 'cohorts' 94.8-95.6 percent of program participants have some shared benefits, i.e., have positive SSWs. Our tables provide data for program participants regardless of whether they have positive SSWs. That is, our tables include participants who have positive taxable earnings but receive no benefits—nearly always because of insufficient quarters of coverage for benefit eligibility or because of death before claiming benefits.

[14] For purposes of determining retired-worker benefits the worker's AIME is determined as follows. Annual taxable earnings through age 60 are indexed, using the average wage series, to wage levels as of the year the worker reaches age 60; annual earnings after age 60 are not wage-indexed. The sum of the 35 highest earnings is divided by 420 (35 x 12) to get AIME. For disabled workers the calculation of AIME often uses a shorter computation period, i. e., less than 35 years. Given that we use a shared benefit

Social Security Wealth (SSW)

Average SSW increases as we move from earlier to later near-retiree 'cohorts'; the medians and means exhibit similar patterns (Table 1). The percentage increase in median SSW from the 1993 'cohort' to the 1998 'cohort' (20 %) is larger than the 1988-1993 and 1998-2003 increases (16% and 12%). The growth of average TX-EARN is the main cause of the growth of average SSW: the 1993-1998 percentage increase is greater than the 1988-1993 and 1998-2003 increases. Under Social Security law, the benefit increases as AIME increases. As shown in Table 1 the percentage increases in average TX-EARN are larger than those for average LC-EARN; this results because legislated taxable maximums were well below the "less-censored" maximums from the 1950s through the early 1980s. Moreover, the percentage increases in average LC-EARN exceed those in the SSA average annual wage; this subject is discussed in Appendix C. Increases in Social Security's Normal Retirement Age (discussed later) and other Social Security program factors can affect the growth of SSW and intercohort changes in annualized payouts and replacement rates. Changes in the socioeconomic and demographic composition of 'cohorts' can also affect the trends in our benefit measures.

There are very few studies with which we can compare these results. Recently Wolff (2001) provided estimates of Social Security wealth for the soon-to-retire.[15] He reported that over the period 1983-1998, mean Social Security wealth declined among the soon-to-retire older American households (47–64 years of age). He attributes this to falling lifetime earnings which translate directly to lower Social Security retirement benefits. When he examines the 47-64 year olds in 3-year age groups, he finds that decreases in mean Social Security wealth occurred for all but one of the six 3-year age groups and were particularly marked for the age groups 56-58, 59-61, and 62-64. In all cases, he finds that Social Security wealth first declined for the period 1983-89 and then rose from 1989-98.

We provide a brief comparison of our results for Social Security wealth with those obtained by Wolff. We compare our results for mean Social Security wealth for

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measure, ANNPAYOUT, we needed a shared earnings measure. AIME is a person or individual measure. For various conceptual and data reasons we could not compute a shared AIME measure.

[15] Wolff (2001) examines retirement wealth among the soon-to-retire. He does not calculate any measures comparable to our other benefit measures.

roughly comparable age groups for roughly comparable periods. Our results indicate that between 1988 and 1998, mean Social Security wealth increases by 39 percent for the 57-58 year olds and by 43 percent for the 59-61 year olds. Between 1989 and 1998, Wolff finds that among 56-58 year olds the increase is 13 percent and among 59-61 year olds the increase is 30 percent. Our results show consistently higher increases than those reported by Wolff. This discrepancy is likely due to differences in the underlying earnings histories used to calculate Social Security benefits. While our computations are based largely on actual earnings histories, Wolff uses lifetime earnings generated from an analysis of single year, cross section data. Realistic variability in lifetime earnings is notoriously difficult to project using standard wage equations.

We do not find any evidence of declining average Social Security wealth in our results that span 1988-2003. Instead, successive cohorts of near-retirees receive higher average amounts than previous cohorts. For our 'cohorts' of 57-61 year olds we find a 1993-98 increase in mean Social Security wealth of 22 percent, about the same percentage increase that Wolff finds for his sample of 56-61 year olds over the longer period of 1989-98.

Annualized SSW Payout (ANNPAYOUT)

Average annualized payout also increases as we move from earlier to later near-retiree 'cohorts;' the medians and means for annualized payouts exhibit similar patterns. The relative 1993-1998 increase in median ANNPAYOUT (18 percent) is larger than the 1988-1993 and 1998-2003 increases (14 and 11 percent). Notice that the relative increases in average ANNPAYOUT are slightly smaller than the corresponding increases in average SSW. This difference is due to small increases in average potential benefit years (all years from year age 62 through last year prior to death); the 1988-1993, 1993-1998, and 1998-2003 increases in mean potential benefit years are 1.0, 2.3, and 1.7 percent. These increases in potential benefit years are the actual and projected increases in life expectancy.

Taxable Earnings Replacement Rates (TX-REPRATE)

As we move from earlier to later near-retiree 'cohorts' the median taxable earnings replacement rate first increases and then decreases.[16] The 1988-1993, 1993-1998, and 1998-2003 changes are +4, - 5, and - 4 percent. [17]

The formula for computing initial Social Security benefits is wage-indexed by the SSA average annual wage. Thus, in the absence of changes in Social Security program provisions such as a change in the Normal Retirement Age, one might expect TX-REPRATE to change very little as we move from earlier 'cohorts' to later 'cohorts' with higher average TX-EARN.[18]

A key cause of the 1993-2003 declines in median TX-REPRATE is the phase-in of increases in Social Security's Normal Retirement Age (NRA) which brings increases in the actuarial reductions in benefits for early retirement. Increases in the NRA are phased in starting with persons reaching age 62 in 2000 (2-month increase in NRA) and continuing through those reaching age 62 in 2005 (12-month increase in NRA). These NRA increases do not affect the 1988 and 1993 'cohorts,' but do affect four of the five single-year cohorts in the 1998 'cohort' (those reaching age 62 in 2000-2003) and all five of the single-year cohorts in the 2003 'cohort' (who reach age 62 in 2004-2008).[19] Persons in the middle single-year cohort of the 1998 (2003) 'cohort' reach age 62 in 2001 (2006). In both the 1998 and 2003 'cohorts' the median (mean) age of first receipt of shared benefits is 62 (62.9). For a worker who reaches age 62 in 2001 and takes benefits at age 62 the NRA increases would reduce their benefit by 2.1 percent. For a worker who reaches age 62 in 2006 and takes benefits at age 62 the NRA increases would reduce their benefit by 6.2 percent.[20] The above facts suggest that NRA increases can account for a

[16] In this paper we do not present means of individual replacement rates. Such means are strongly affected by the relatively small number of very high individual replacement rates. We estimate some group replacement rates. The replacement rate of a group ('cohort' or subgroup of a 'cohort') is mean ANNPAYOUT of the group as a percent of mean earnings of the group.

[17] For all program participants group taxable earnings replacement rates are similar to the corresponding median TX-REPRATEs; for group replacement rates the intercohort increase is a bit smaller and the intercohort decreases are slightly larger.

[18] However, prior to the early 1980s taxable earnings were generally not wage-indexed.

[19] The increased actuarial reductions for widow beneficiaries are phased in starting with persons reaching age 60 in 2000.

[20] For a worker who reaches age 62 in 2001 and takes benefits at age 63 the NRA increases would reduce their benefit by 2.6 percent. For a worker who reaches age 62 in 2006 and takes benefits at age 63 the NRA increases would reduce their benefit by 7.7 percent. The percentage benefit reduction caused by the

large part of the decreases in TX-REPRATE as we move from the 1993 'cohort' to later 'cohorts.'

The interaction of the growth of women's labor market activity with the benefit formula may also account for part of the 1993-2003 decrease in TX-REPRATE. Persons can receive benefits based on their own earnings (worker benefits) or based on the earnings of their spouses or deceased spouses (auxiliary benefits). The person will receive the larger of the worker benefit or the auxiliary benefit. The lifetime earnings of most wives are lower than those of their husbands. Most women receive auxiliary benefits and the great majority of men receive worker benefits. A sizable part of the growth in female earnings relative to male earnings does not lead to higher benefits and thus, ceteris paribus, there would be an intercohort decrease in TX-REPRATE.

A person's retired worker benefits are based on that person's Average Indexed Monthly Earnings. In the computation of AIME the person's earnings are wage-indexed to the level of the SSA average annual wage prevailing for the calendar year in which the person attains age 60.[21] Taxable Earnings, TX-EARN (the denominator of the person's taxable earnings replacement rate, TX-REPRATE) is wage-indexed to the level of the SSA average annual wage prevailing at the beginning of the year in which that person attains age 62. These differences in indexing can affect intercohort changes in replacement rates. From the calendar year they reached age 60 to the beginning of the year they reached age 62, members of the 1988 'cohort' saw the average annual wage increase about 6.4 percent. The comparable figures for the 1993, 1998, and 2003 'cohorts' are about 6.0 percent, 7.5 percent, and 6.3 percent. For the 1988 (1993) 'cohort' TX-EARN is 6.4 (6.0) percent larger than it would be if wage-indexed to the level prevailing for the calendar year the person reached age 60. The 0.4 (6.4 minus 6.0) percentage point decrease in the growth rate of the average wage would lead, ceteris paribus, to a small rise in the TX-REPRATE of the 1993 'cohort' relative to that of the

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NRA increase is smaller for those who take benefits at age 62 than for those who take benefits at age 63 because with the higher NRA the average monthly actuarial reduction factor is smaller for those who take benefits at age 62. With the higher NRA the monthly actuarial reduction factor is 5/9 percent for each of the first 36 months of early benefit receipt and 5/12 percent for each of the remaining months of early benefit receipt.

[21] The first cost-of-living adjustment to benefits does not occur until the end of the year the person reaches age 62.

1988 'cohort'.[22] Similarly, the 1.5 percentage point increase in the growth rate of the average wage would lead, ceteris paribus, to a fall in the TX-REPRATE of the 1998 'cohort' relative to that of the 1993 'cohort;' the 1.2 percentage point decrease in the growth rate of the average wage would lead, ceteris paribus, to a rise in the TX-REPRATE of the 2003 'cohort' relative to that of the 1998 'cohort.'

"Less-Censored" Earnings Replacement Rates (LC-REPRATE)

As we move from earlier to later near-retiree 'cohorts,' the median "less-censored" earnings replacement rate also first increases and then decreases. The 1988-1993, 1993-1998, and 1998-2003 changes are +6, -2, and -2 percent. Notice that the relative decreases (increase) in median LC-REPRATE are smaller (larger) than the corresponding decreases (increase) in median TX-REPRATE. This difference results because as shown in Table 1 the relative intercohort increases in average TX-EARN are a bit larger than those for average LC-EARN.

Results: By Sex and Marital Status

We now turn to results for sex-marital status subgroups. Marital status is as of the beginning of the year the person reaches age 62. Table 2 describes briefly several characteristics of each 'cohort' of near-retirees. Educational attainment levels have steadily risen from earlier to later near-retiree 'cohorts.' In the 2003 'cohort,' 28 percent of near-retirees are college graduates compared with only 17 percent just fifteen years earlier. The percentage white decreased slightly while the percent of people who identify themselves as Hispanic rose. There has been a notable increase in the percent of foreign-born among near-retirees. The 2003 'cohort' has the largest share of divorced individuals. There is a slight rise in the mean number of marriages entered during one's lifetime.

[22] Wage-indexing TX-EARN to age 62 instead of to age 60 causes TX-REPRATE for the 1988 'cohort' to be about 6.0 percent [100 – (100/1.064)] lower than it would be if TX-EARN were wage-indexed to age 60; the comparable decrease for the 1993 'cohort' is about 5.7 percent [100 – (100/1.060)].

Social Security Wealth (SSW)

For each marital status subgroup, SSW is greater for women than men (Table 3a). For each of the not-married subgroups, SSW is greater for women because on average they have a longer period of benefit receipt. For the married subgroup, SSW is greater for women for two reasons: (1) their longer period of benefit receipt and (2) our use of a shared concept of wealth rather than an individual concept.[23] Women in every 'cohort' and every marital status have considerably more years of benefit receipt than men. For example, for married (divorced) women, the median number of years of benefit receipt is 26 (26) compared with only 17 (14) for married (divorced) men in the 2003 'cohort.' The never-married receive the lowest SSW in each gender group, while the ever-married have roughly similar amounts.

For each sex-marital status subgroup, median SSW is greater for the 2003 'cohort' than for the 1988 'cohort.' The relative change in the amount of SSW between the 1988 'cohort' and the 2003 'cohort' is similar for men and women, increasing by 57 percent and 62 percent. The patterns of relative increase are somewhat different among marital status groups.

Annualized SSW Payout (ANNPAYOUT)

The ANNPAYOUT amounts given in Table 3b show that not-married women receive smaller amounts than not-married men across the four 'cohorts.' ANNPAYOUT spreads SSW over potential benefit years. Because median potential benefit years are greater for women than men (Table 3g), the ratio of female to male median amounts is considerably lower for ANNPAYOUT than for SSW. For the never-married, the ratio of female ANNPAYOUT to male ANNPAYOUT is less than one because female taxable earnings, TX-EARN, is less than male TX-EARN (Table 3e). For the divorced, the fact that female ANNPAYOUT is less than male ANNPAYOUT is probably because the earnings of these divorced females typically are less than those of their ex-spouses while the earnings of these divorced males typically are greater than those of their ex-spouses. Thus divorced men tend to receive higher benefits based on their own higher earnings

[23] Most married women receive smaller annual benefits (auxiliary or worker) than their husbands. Thus, for most married women (men) shared benefit is greater (less) than individual benefit.

while divorced women tend to receive lower benefits (divorced spouse benefits or worker benefits based on their own lower earnings). For the married, median ANNPAYOUT is slightly larger for women than for men.

In each of the four 'cohorts,' never-married women receive the lowest ANNPAYOUT amounts while women in other groups receive somewhat similar amounts. Among men, the widowed and divorced show substantially larger ANNPAYOUT amounts than men in the other two subgroups. Taxable earnings, TX-EARN, of widowed and divorced men are generally higher than those of never-married men. The married share the benefits received by the couple; the benefit received by the wife is usually smaller than that received by the husband.

For each sex-marital status subgroup median annualized payout is greater for the 2003 'cohort' than for the 1988 'cohort.' Overall men see their ANNPAYOUT amounts go up by 50 percent between the 1988 and 2003 'cohorts,' compared to 47 percent for women. For each marital status subgroup the increases are rather similar for men and women.

Taxable Earnings Replacement Rates (TX-REPRATE)

As seen in Table 3c, overall TX-REPRATEs are a bit higher for women than men; for the 2003 'cohort,' TX-REPRATEs for women and men are 33 percent and 29 percent. Among women, TX-REPRATEs are highest for widows, while the TX-REPRATEs are quite similar for women in other marital status groups. For the 2003 'cohort,' TX-REPRATE for widows is 44 percent compared with rates between 30 and 32 percent for the other female subgroups. Among men, TX-REPRATEs are lowest for the married and highest for the widowed and divorced. Widowed and divorced men show markedly larger ANNPAYOUT amounts than men in the other two subgroups. Married men show higher TX-EARN than the other three subgroups.

For seven of the eight subgroups TX-REPRATEs are higher for the 1993 'cohort' than for the 1988 'cohort;' between these two 'cohorts' TX-REPRATEs rose by 4 percent for women and 3 percent for men. In subsequent years, replacement rates fell. For each subgroup median TX-REPRATE is lower for the 2003 'cohort' than for the 1993

'cohort;' between the 1993 and 2003 'cohorts,' TX-REPRATE fell by 11 percent for women and 7 percent for men.

"Less-Censored" Earnings Replacement Rates (LC-REPRATE)

LC-REPRATE values are, as is to be expected, lower than the corresponding taxable earnings replacement rate, TX-REPRATE, values, as seen in Table 3d. Overall LC-REPRATEs are higher for women than men as observed with TX-REPRATEs; for the 2003 'cohort' LC-REPRATEs for women and men are 31 percent and 28 percent. The widowed have the highest replacement rates. For seven of the eight subgroups LC-REPRATEs are higher for the 1993 'cohort' than for the 1988 'cohort. For seven of the eight subgroups LC-REPRATEs are lower for the 2003 'cohort' than for the 1993 'cohort.'

Results: By Earnings Quintiles

Information for the four 'cohorts' by quintiles of "less-censored" earnings, LC-EARN, is shown in Table 4 and Figures 4a-b. LC-EARN is superior to TX-EARN in approximating quintile rankings by total average wage-indexed earnings. Within each of the 20 single-year cohorts of near-retirees we rank persons by LC-EARN and group them into quintiles. A person's quintile location in their 5-year 'cohort' is their quintile location within their single-year cohort.

As expected, the median annualized payout increases markedly as we move to higher earnings quintiles (Figure 4a). For the 2003 'cohort,' for example, the top quintile's ANNPAYOUT is about 2.4 times that of the bottom quintile.

For each 'less-censored" earnings quintile median annualized payout increases as we move from earlier to later 'cohorts.' Each quintile has about the same 1993-1998 relative increase in ANNPAYOUT (17-20 percent). In addition, each of the top four quintiles has about the same 1988-1993 relative ANNPAYOUT increase (11-15 percent). However, the 1998-2003 relative increases rise consistently from lowest to highest quintile (from 4 percent to 15 percent). The pattern of differences in 1998-2003 earnings growth by quintiles is the main cause of the pattern of differences in ANNPAYOUT

growth by quintiles. The 1998-2003 relative increases in median taxable earnings, TX-EARN, and in median "less-censored" earnings, LC-EARN, rise consistently from the lowest to the highest quintile (from 3 percent to 18-22 percent).

Again as expected, the median 'less-censored" earnings replacement rate (LC-REPRATE) falls sharply as we move to higher earnings quintiles, i.e., shows a lot of progressivity (Figure 4b). Recall that under OASDI's progressive benefit formula Monthly Benefit Amount decreases as a percentage of Average Indexed Monthly Earnings (AIME), as AIME increases. For the 2003 'cohort' the median LC-REPRATEs for the bottom and top quintiles are 53 and 22 percent.

For each quintile, LC-REPRATE first increases and then decreases as we move from earlier to later near-retiree 'cohorts.' Median LC-REPRATE for each quintile is a bit lower for the 2003 'cohort' than for the 1993 'cohort.' The relative 1993-2003 decreases are a bit larger for the bottom 2 quintiles than for the top 3 quintiles. We can say that the LC-REPRATEs show a bit less progressivity in 2003 than in 1993. From the 1993 'cohort' to the 2003 'cohort' the ratio of the top quintile's replacement rate to that of the bottom quintile rises from .384 to .409; the percentage point shortfall of the top quintile's replacement rate from that of the bottom quintile drops from 35.3 percentage points to 31.2 percentage points.

Additional Measures

We looked at two additional benefit measures. We looked at size-adjusted measures and measures for the non-Disability Insurance Benefit population.

Size-Adjusted Measures

All the results presented and discussed in the previous sections are for shared benefits (and shared earnings). For each year the person's shared benefit equals the per capita benefit of the unit (married couple or unmarried person) to which the person belongs.

The results presented briefly here and in some detail in Appendix D are for size-adjusted benefits (and size-adjusted earnings). The general view in the economic

literature is that there are considerable economies of scale with respect to unit size in the production of economic well-being. Thus, a given per capita or shared benefit contributes more to the economic well-being of a married person than to that of an unmarried person. The adjustment of benefits for differences in unit size attempts to achieve a situation in which a given size-adjusted benefit contributes the same to the well-being of a married person as to that of an unmarried person. The adjusted benefit measures (ANNPAYOUT and SSW) are cardinal measures of the number of utility units contributed by Social Security benefits to the economic well-being of a person. [24]

We adjust benefits and earnings for differences in unit size using an equivalence scale implicit in the official U. S. poverty thresholds. Our equivalence scale is for two types of units—unmarried persons and married couples. The equivalence scale values are 1.00 and 1.26 for these two types of units. This equivalence scale incorporates considerable economies of scale. For each year a person is married, the person's adjusted benefit equals the couple's benefit divided by 1.26. For each year a person is not married, the person's adjusted benefit equals the person's benefit. This equivalence scale is also used to compute size-adjusted earnings.

An important effect of size adjustment is to very substantially increase SSW and ANNPAYOUT of the married subgroups relative to those of the other sex-marital status subgroups. Size adjustment increases median ANNPAYOUT of married men and married women by about 55 percent and 40 percent. The increases for the six not-married subgroups are much smaller (1-11 percent).[25] The effects on median SSW are similar. The percentage increases in SSW and ANNPAYOUT are larger for married men than for married women because these men spend a larger proportion of their benefit receipt years married than do these women. This is primarily because about three-fourths of women outlive their husbands.

The main effect of size adjustment on replacement rates is to decrease the replacement rates of the widowed and divorced relative to those of the never-married and married. For example, for the 2003 'cohort' size adjustment decreases the median "less-

[24] For many persons the present value of the stream of dollar benefit payments just sufficient to achieve the person's stream of size-adjusted ANNPAYOUT may not equal the person's shared SSW.
[25] The very small increases for the never-married result because a few of them do marry after the start of the year they reach age 62.

censored" replacement rate, LC-REPRATE, of the widowed and divorced by 29 percent and 19 percent. The changes for the never-married and married are quite small (+6 percent and -2 percent). The effects of size adjustment on replacement rates result from effects on both the numerator and denominator of these rates. For the widowed and divorced size adjustment produces small percentage changes in the numerator (ANNPAYOUT--see above) but quite sizable percentage increases in the denominator (TX-EARN or LC-EARN). For the married size adjustment produces large percentage increases in both the numerator and denominator. For the never-married size adjustment produces small percentage increases in the numerator and no change in the denominator.

Size adjustment also reduces somewhat the measured progressivity of LC-REPRATEs. For example, for the 2003 'cohort' size adjustment increases the ratio of the top quintile's replacement rate to that of the bottom quintile from .409 to .425; size adjustment reduces the percentage point shortfall of the top quintile's replacement rate from that of the bottom quintile from 31.2 to 28.4.

Measures for Non-Disability Insurance Benefit (DIB) Population

The results for shared benefits and earnings presented and discussed in previous sections are for all Social Security program participants. Some of these near-retiree participants received DI benefits and some had spouses who received DI benefits. It is useful to look at results for just the non-DIB near-retirees.

The results presented briefly here are for non-DIB participants, i.e., program participants who did not receive DI benefits and did not have spouses who received DI benefits.[26] More detailed results are presented in Appendix E which is available upon request.

Non-DIB program participants account for about 85 percent of all program participants. Thus, we find, as expected, that the exclusion of DIB persons does not have large effects on our results. Exclusion of DIB persons increases average SSW by 2-5 percent and decreases average ANNPAYOUT by 1-4 percent. One reason this exclusion decreases the ratio of ANNPAYOUT to SSW is that the ratio of actual benefit receipt

[26] A person is said to receive a DI benefit if their entitlement status is either worker only or dually entitled; a dually entitled DI beneficiary is entitled to a DI worker benefit and to a larger spouse or survivor benefit.

years to potential benefit years is lower for the non-DIB population than for the DIB population. The exclusion of DIB persons decreases median replacement rates by 4-6 percent. Both a decrease in ANNPAYOUT and an increase in average career earnings contribute to this decrease in replacement rates. This exclusion reduces somewhat the measured progressivity of LC-REPRATEs.

A Recap

A few of our key results are:

- Average Social Security wealth and average annualized payout increase markedly as we move from earlier to later near-retiree 'cohorts' primarily due to increases in average wage-indexed taxable earnings.
- Our estimates show the increase in mean Social Security wealth from the 1988 'cohort' to the 1998 'cohort' to be considerably larger than that reported by Wolff for the 1989-98 period.
- Replacement rates decrease as we move from the 1993 'cohort' to later 'cohorts' primarily due to the phase-in of increases in the Normal Retirement Age.
- For the not-married, median Social Security wealth is much higher for women than for men, but median annualized payout is markedly lower for women than for men. This reversal of positions is due to the much greater longevity of women.
- Earnings replacement rates are somewhat higher for women as a group than for men.
- The 1998-2003 percentage increases in median annualized Social Security wealth payout amounts rise consistently from the lowest earnings quintile to the highest quintile due primarily to the pattern of differences in earnings growth by quintiles.
- Replacement rates show a bit less progressivity in 2003 than in 1993.

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Table 1. Social Security Benefit and Related Measures for 'Cohorts' of Near-Retirees

	'Cohort'				Percentage Change				
	1988	1993	1998	2003	1988-1993	1993-1998	1998-2003	1993-2003	1988-2003
SSW ($)									
Median	105,624	122,258	147,003	164,961	16	20	12	35	56
Mean	108,352	125,588	153,307	173,296	16	22	13	38	60
ANNPAYOUT ($)									
Median	5,580	6,338	7,487	8,292	14	18	11	31	49
Mean	5,382	6,079	7,189	7,952	13	18	11	31	48
Median TX-REPRATE (%)	32.6	33.9	32.2	31.0	4	-5	-4	-9	-5
Median LC-REPRATE (%)	28.8	30.6	30.0	29.5	6	-2	-2	-4	2
TX-EARN ($)									
Median	16,836	18,454	22,915	26,198	10	24	14	42	56
Mean	16,460	18,309	22,995	26,770	11	26	16	46	63
LC-EARN ($)									
Median	19,093	20,276	24,437	27,237	6	21	11	34	43
Mean	18,917	20,354	24,775	28,061	8	22	13	38	48
Mean Potential Benefit Years	21.23	21.47	21.97	22.34	1.13	2.33	1.68	4.05	5.23

Source: Authors' computations on MINT3 data.

Note: Money amounts are in January 1, 2002 dollars.

'Cohort' t: Persons aged 57-61 in Year t.

SSW: Social Security Wealth.

ANNPAYOUT: Annualized Payout.

TX-REPRATE: Taxable Earnings Replacement Rate.

LC-REPRATE: "Less-Censored" Earnings Replacement Rate.

TX-EARN: Average wage-indexed Taxable Earnings.

LC-EARN: Average wage-indexed "Less-Censored" Earnings.

Table 2. Selected Characteristics of Near-Retirees by 'Cohort'

	'Cohort'			
	1988	**1993**	**1998**	**2003**
Male (%)	46.74	48.20	47.65	48.43
Education (%)				
Dropout	28.48	24.71	18.59	14.92
High School Graduate	54.64	56.03	59.95	57.58
College Graduate	16.87	19.27	21.46	27.50
Number of Grades Completed (mean)	12.03	12.32	12.75	13.2
Race (%)				
White	88.05	86.60	86.95	85.56
Black	8.98	9.95	9.62	10.09
Native American	0.60	0.71	0.70	0.56
Asian	2.36	2.73	2.72	3.79
Hispanic (%)	5.77	6.72	6.77	7.51
Foreign Born (%)	7.96	9.92	10.35	11.57
Marital Status at Age 62 (%)				
Never married	**4.08**	**4.23**	**4.32**	**5.10**
Women	1.62	2.06	2.22	2.72
Men	2.46	2.17	2.10	2.38
Married	**74.50**	**74.46**	**73.24**	**71.35**
Women	35.39	34.60	34.78	33.52
Men	39.11	39.86	38.46	37.83
Widowed	**12.36**	**10.06**	**7.83**	**7.55**
Women	10.42	8.61	6.63	5.99
Men	1.94	1.45	1.20	1.56
Divorced	**9.06**	**11.26**	**14.61**	**16.00**
Women	5.64	6.54	8.72	9.34
Men	3.43	4.72	5.89	6.66
Number of Marriages (mean)	1.29	1.35	1.39	1.42
Sample size (unweighted)	6,602*	6,584	7,524	9,562
Sample size (weighted)	10,372,401	10,032,734	11,114,759	13,910,898

Source: Authors' tabulations using MINT3 data.

*Not corrected for attrition.

Table 3a. Median Shared Social Security Wealth (SSW) by 'Cohort', Sex, and Marital Status

'Cohort' and Sex	Marital status at age 62				
	Never Married	Married	Widowed	Divorced	All
			(Jan. 1, 2002 $)		
1988					
Women	78,347	123,792	128,049	107,271	120,660
Men	73,288	92,312	107,626	75,255	87,018
All	70,101	105,077	125,149	91,966	105,624
1993					
Women	95,595	149,838	142,041	147,314	146,224
Men	60,214	101,214	112,293	96,411	99,454
All	80,195	122,107	134,931	123,063	122,258
1998					
Women	127,556	177,171	177,615	177,847	175,531
Men	108,973	121,625	129,375	121,798	121,767
All	115,961	145,385	167,753	153,148	147,003
2003					
Women	133,549	196,891	203,534	198,649	195,822
Men	105,137	137,700	152,987	137,421	136,700
All	119,263	163,742	188,613	171,960	164,961

Table 3b. Median Annualized Payout (ANNPAYOUT) by 'Cohort', Sex, and Marital Status

'Cohort' and Sex	Marital status at age 62				
	Never Married	Married	Widowed	Divorced	All
			(Jan. 1, 2002 $)		
1988					
Women	4,841	5,645	6,087	4,919	5,646
Men	5,663	5,428	6,918	6,570	5,513
All	5,183	5,533	6,228	5,411	5,580
1993					
Women	4,614	6,476	6,854	6,049	6,425
Men	5,019	6,116	7,568	7,526	6,232
All	4,837	6,281	6,948	6,564	6,338
1998					
Women	5,769	7,567	7,955	7,256	7,520
Men	7,792	7,265	9,406	8,926	7,446
All	6,755	7,414	8,130	7,808	7,487
2003					
Women	6,625	8,396	8,663	8,137	8,316
Men	7,254	8,074	9,521	10,039	8,249
All	6,964	8,231	8,761	8,771	8,292

Table 3c. Median Taxable Earnings Replacement Rates (TX-REPRATE) by 'Cohort', Sex, and Marital Status

'Cohort' and Sex	Marital status at age 62				
	Never Married	Married	Widowed	Divorced	All
			(%)		
1988					
Women	28.9	34.0	47.0	33.5	35.6
Men	32.8	29.7	38.1	39.3	30.1
All	30.4	31.6	45.2	35.2	32.6
1993					
Women	34.9	35.5	47.8	35.2	37.0
Men	36.7	30.2	39.3	37.8	31.1
All	35.9	32.7	46.5	36.2	33.9
1998					
Women	30.5	33.4	43.1	34.0	34.2
Men	31.9	29.0	41.0	35.4	29.9
All	31.3	31.2	42.9	34.6	32.2
2003					
Women	30.0	32.0	43.6	32.0	32.9
Men	32.6	28.1	38.8	34.2	29.0
All	31.4	29.9	42.5	33.0	31.0

Table 3d. Median "Less-Censored" Earnings Replacement Rates (LC-REPRATE) by 'Cohort', Sex, and Marital Status

'Cohort' and Sex	Marital status at age 62				
	Never Married	Married	Widowed	Divorced	All
			(%)		
1988					
Women	26.8	29.5	41.6	31.0	31.4
Men	29.7	25.6	36.0	35.7	26.4
All	28.6	27.4	40.8	32.2	28.8
1993					
Women	30.5	31.8	44.3	33.0	33.7
Men	33.9	27.3	36.9	35.6	28.1
All	32.6	29.1	42.7	34.1	30.6
1998					
Women	30.3	31.2	40.5	32.4	32.2
Men	30.1	27.1	37.7	33.1	28.0
All	30.2	28.9	39.8	32.6	30.0
2003					
Women	29.2	30.3	41.7	31.0	31.3
Men	29.8	26.7	37.9	33.1	27.6
All	29.3	28.4	41.2	32.1	29.5

Table 3e. Median Taxable Earnings (TX-EARN) by 'Cohort', Sex, and Marital Status

'Cohort' and Sex	Marital status at age 62				
	Never Married	Married	Widowed	Divorced	All
			(Jan. 1, 2002 $)		
1988					
Women	14,141	16,562	12,894	13,157	15,323
Men	15,392	18,937	16,411	16,817	18,629
All	15,235	17,697	13,216	14,214	16,836
1993					
Women	10,219	18,144	13,463	16,012	16,831
Men	14,032	20,460	19,631	18,858	20,065
All	11,581	19,431	14,226	16,960	18,454
1998					
Women	13,836	22,560	17,818	19,907	21,349
Men	22,910	24,936	22,853	24,858	24,859
All	18,461	23,745	18,666	21,589	22,915
2003					
Women	16,595	25,977	18,395	23,407	24,207
Men	21,517	29,228	24,574	28,005	28,681
All	18,375	27,473	19,787	25,164	26,198

Table 3f. Median "Less-Censored" Earnings (LC-EARN) by 'Cohort', Sex, and Marital Status

'Cohort' and Sex	Marital status at age 62				
	Never Married	Married	Widowed	Divorced	All
			(Jan. 1, 2002 $)		
1988					
Women	14,984	19,029	14,404	14,092	17,552
Men	15,861	21,365	18,111	17,659	21,003
All	16,625	20,204	15,044	15,324	19,093
1993					
Women	10,998	20,351	14,334	17,427	18,593
Men	15,758	22,557	21,727	20,134	22,143
All	12,566	21,580	15,084	18,577	20,276
1998					
Women	13,836	24,130	18,930	20,852	22,834
Men	23,282	26,577	23,897	25,976	26,363
All	18,739	25,452	19,649	23,029	24,437
2003					
Women	16,839	27,036	19,077	24,408	25,283
Men	22,365	30,386	25,070	29,234	29,714
All	19,373	28,736	20,823	25,825	27,237

Table 3g. Median Potential Benefit Years by 'Cohort', Sex, and Marital Status

'Cohort' and Sex	Marital status at age 62				
	Never Married	Married	Widowed	Divorced	All
1988					
Women	24	25	23	22	24
Men	16	19	18	13	17
All	19	22	23	18	22
1993					
Women	27	26	24	25	25
Men	14	18	14	15	17
All	18	22	23	20	22
1998					
Women	24	26	25	26	26
Men	18	18	14	15	18
All	20	22	24	22	22
2003					
Women	24	26	26	28	27
Men	15	19	19	16	18
All	19	22	24	22	22

Table 4. Social Security Benefit and Related Measures for 'Cohorts' of Near-Retirees by "Less-Censored" Earnings Quintiles

Quintile	'Cohort' 1988	1993	1998	2003
Social Security Wealth (SSW) (Jan. 1, 2002 $)				
Bottom	47,538	57,888	69,173	76,649
2nd	95,893	109,787	130,169	146,100
3rd	110,430	137,730	161,425	186,338
4th	131,188	152,326	193,914	215,300
Top	146,868	170,219	220,816	251,363
Taxable Earnings Replacement Rates (TX-REPRATE) (%)				
Bottom	57.7	60.5	58.0	56.8
2nd	40.5	42.5	39.4	39.6
3rd	33.1	34.8	33.0	32.0
4th	29.4	29.9	28.4	27.0
Top	25.0	25.3	23.9	22.7
Taxable Earnings (TX-EARN) (Jan. 1, 2002 $)				
Bottom	4,940	5,852	7,113	7,342
2nd	11,863	13,161	16,579	17,821
3rd	17,077	18,693	23,087	26,381
4th	21,440	23,594	29,408	34,832
Top	26,733	29,931	37,982	46,258
"Less-Censored" Earnings (LC-EARN) (Jan.1, 2002 $)				
Bottom	5,114	6,091	7,711	7,923
2nd	12,953	14,008	17,321	18,512
3rd	19,111	20,282	24,465	27,241
4th	24,685	26,121	31,619	36,332
Top	31,599		41,062	48,299
Potential Benefit Years				
Bottom	20	19	20	21
2nd	21	21	21	21
3rd	22	23	22	23
4th	21	22	24	23
Top	23	23	24	24

Fig. 4a. Median Annualized Payout for Near-Retirees by Earnings Quintiles

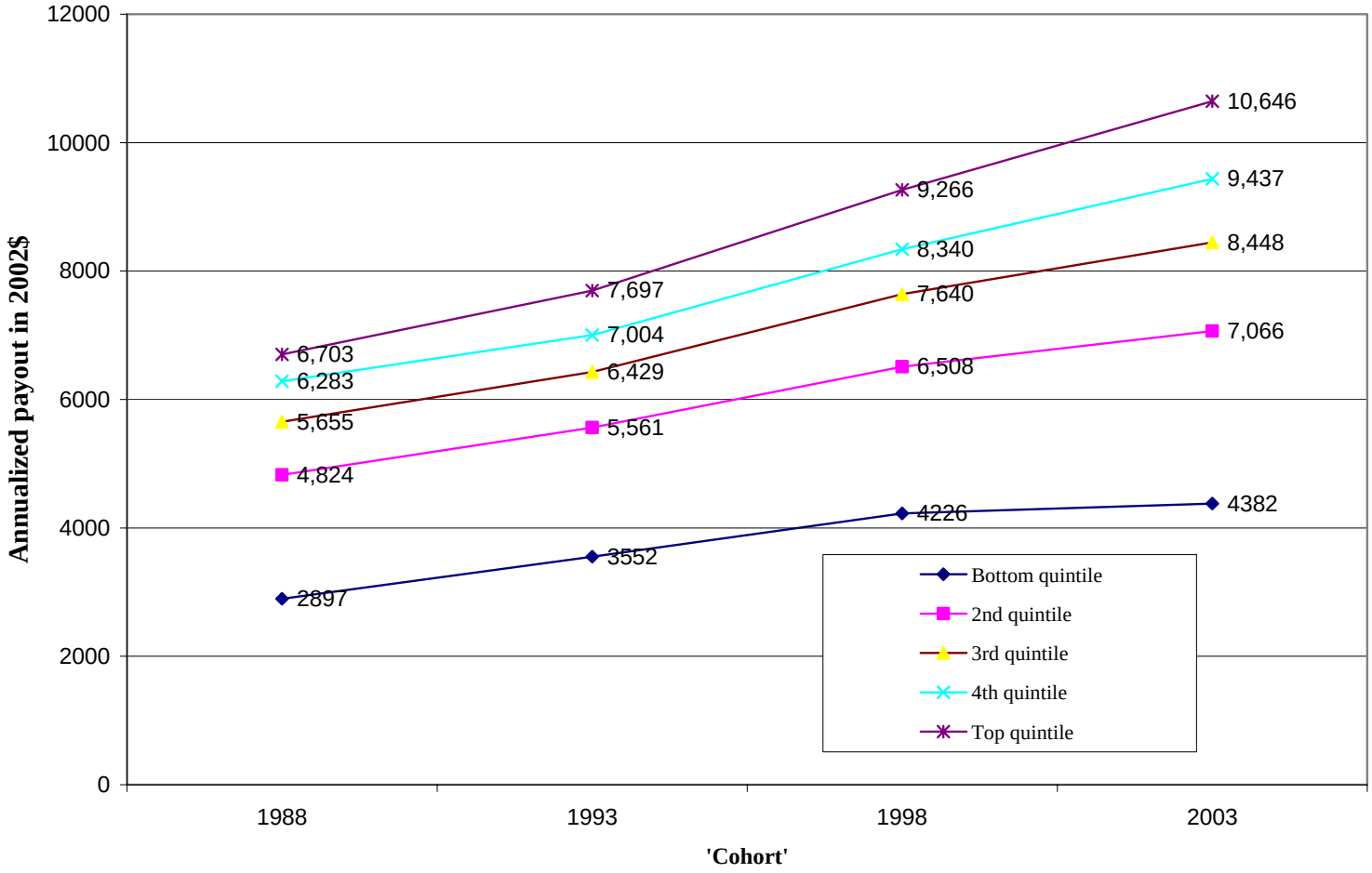
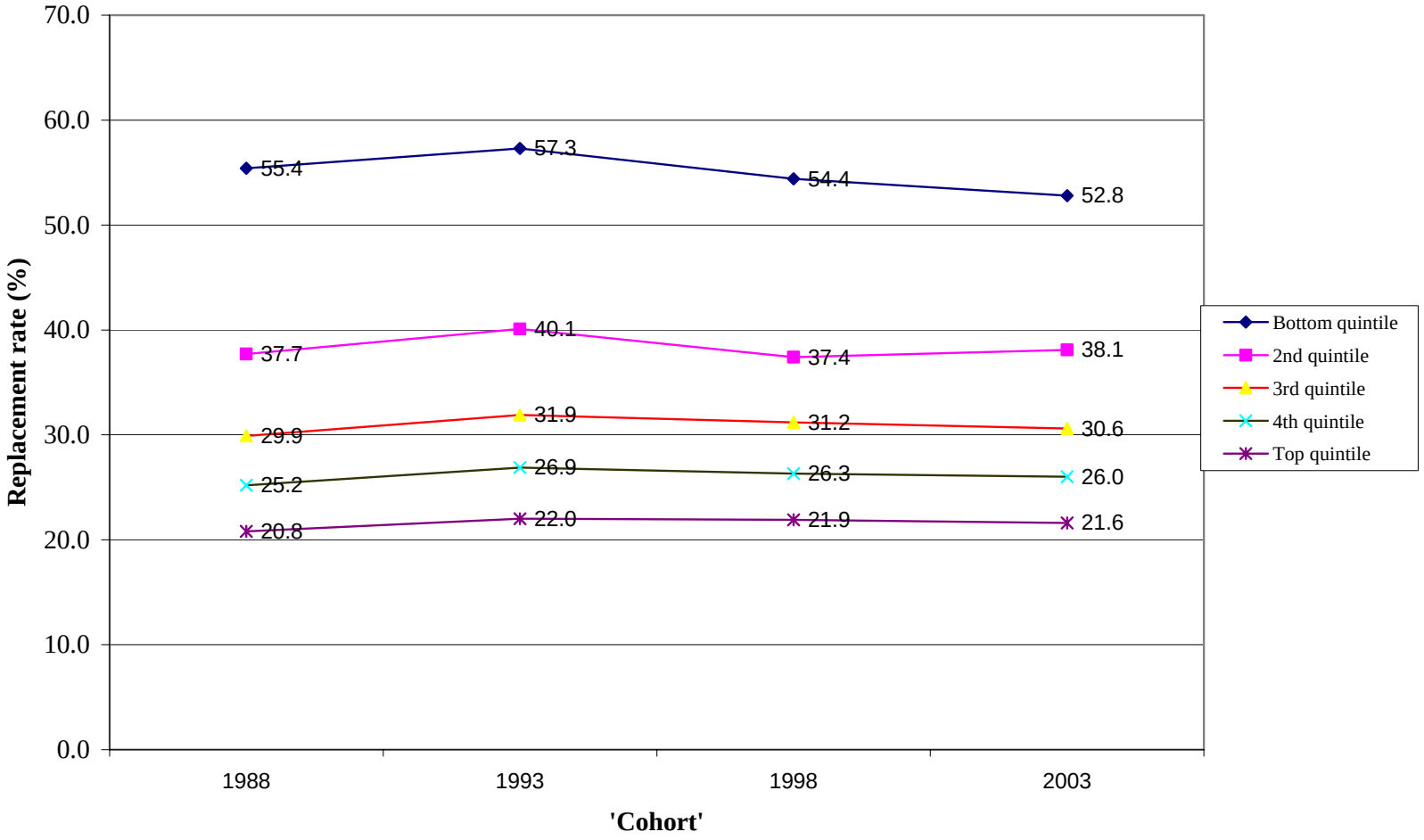


Fig. 4b. Median "Less-Censored" Earnings Replacement Rates of Near-Retirees by Earnings Quintiles



Appendix A. More Information on MINT3 Model

Completing the Historical Data

Missing Administrative Records

Administrative records are imputed using a hot-deck procedure for the 8 percent of persons with no exact match. Age, sex, marital status, race, education, and SIPP earnings are among the variables used in the hot-decking. In addition, administrative records are imputed for the former spouses of SIPP sample members using a hot-deck procedure. The administrative records contain information on mortality, disability, benefit history, and earnings history.

"Less-Censored" Earnings

In the 1951-77 period the administrative earnings records (Summary Earnings Records) contain information on the quarter in which a person's earnings reached the legislated taxable maximum. This information along with wage information from several Current Population Surveys (CPS) is used to impute earnings above the 1951-77 legislated taxable maximums but not exceeding the "less-censored" taxable maximums.

For the 1978-89 period the Summary Earnings Records do not contain information on the quarter in which an individual's earnings reached the legislated taxable maximums. For this period CPS wage information is used to impute earnings above the legislated taxable maximums but not exceeding the "less-censored" taxable maximums.

Making Projections

Because of the order of the processes in the MINT 3 projection model, there is minimal interaction between demographic and economic events. Death is determined first for all persons, then marital dynamics, and then earnings.

Mortality

Mortality under age 65 is projected using a hot-deck procedure that selects older workers' earnings to splice to the end of incomplete earnings records of younger workers. This splicing procedure gives projections of mortality and disability as well as of earnings. Age, sex, and education are among the variables used in this splicing procedure. Pre-age 65 mortality is adjusted to match the Trustees Report mortality assumptions.

Mortality after age 65 is projected using a regression model that includes age, sex, marital status, education, and race among its predictor variables. Post-age 65 mortality rates are slightly lower than those assumed in the Trustees Report.

Marital Dynamics

Changes in marital status are projected using hazard models that include age, sex, marital history, education, race, and ethnicity among their predictor variables.

Demographic characteristics (age, race, education, disability history, etc.) of each projected spouse were imputed based on the characteristics of the sample person. Then a hot-deck imputation procedure was used to impute earnings, etc. to the projected spouses; age, marital history, education, and race are among the variables used in the hot-decking.

Earnings

For nondisabled workers post-age 50 earnings are projected using a series of regression equations. Age, sex, and education are predictors in all of the regressions. Marital status, race, ethnicity, earnings, health, and spouse characteristics are predictor variables in some of the regressions.

For disabled workers earnings are projected using the hot-deck splicing procedure described above in our discussion of mortality.

Benefit Acceptance Dates

Several regression equations are used to project benefit entitlement dates. Among the predictor variables are age, sex, marital status, education, race, ethnicity, earnings, and spouse characteristics.

Immigration

Persons are projected to enter the MINT sample by means of immigration in the years after the end of the SIPP interview. A hot-deck imputation procedure is used to select post-interview immigrants from a donor pool of immigrants from the SIPP sample. The imputation is done so as to approximate estimated control totals of immigrants by time period, sex, age at immigration, and source region. The records of the selected donors are then updated to the year of projected immigration.

Appendix B. Removing Effects of Attrition from Benefit and Earnings Measures for 1988 'Cohort'

The paper looks at 20 single-year cohorts, i.e., those persons reaching age 61 in the 20 years from 1988 through 2007. Each single-year cohort consists of all persons who reach age 61 during that year, and are members of the noninstitutional population at the end of that year. In our tables we combine these single-year cohorts into 4 groups of five single-year cohorts each---1988-92 (1988 'cohort' or 'cohort' 1), 1993-97 (1993 'cohort' or 'cohort' 2), 1998-2002 (1998 'cohort' or 'cohort' 3), and 2003-2007 (2003 'cohort' or 'cohort' 4).

The initial MINT sample is from the 1990-93 panels of the SIPP. The SIPP panels are samples of the U.S. noninstitutional population. The first interviews of the 1990, 1991, 1992, and 1993 panels took place in early 1990, early 1991, early 1992, and early 1993. The MINT datafile only includes persons who were interviewed in the SIPP in 1990-1993 or were projected to immigrate to the U.S. after 1993.[27] The MINT datafile contains actual or projected information on the dates of death, institutionalization, and emigration of these persons.

The MINT population excludes persons reaching age 61 in 1988-92 who were not eligible for SIPP interviews because after reaching age 61 they attrited from the U.S. noninstitutional population as a result of death, institutionalization, or emigration prior to the first SIPP interviews in 1990-1993. This attrition affects the size and composition of 'cohort' 1, but does not affect the other 3 'cohorts.' Without appropriate corrections for attrition bias the benefit and earnings measures (mean SSW, median ANNPAYOUT, etc.) for 'cohort' 1 are not totally comparable to those of the latter 3 'cohorts.'

We attempt to remove the effects of this attrition on the benefit and earnings measures for 'cohort' 1 by the use of attrition factors and thus to make the measures comparable to the measures for the other 3 'cohorts.' We compute attrition factors using data for the second 'cohort' of near-retirees.

First, we determine which persons are 'hypothetical' attriters. If the SIPP interviews had started 5 years later, i.e., in 1995-98 instead of in 1990-93, some of the members of the 'cohort' 2 would have died, entered institutions, or emigrated before the start of the hypothetical interviews; these are the 'hypothetical' attriters. About 1.6 percent of 'cohort' 2 is lost via 'hypothetical' attrition, overwhelmingly due to death.

Next, for each benefit or earnings measure (M_i) we determine an attrition factor for all participants and for each sex-marital status subgroup and for each quintile group as follows:
$M_{i,j,k}$: measure of type i for cohort group j for population k.

[27] It also includes some information on the actual or imputed spouses of these persons.

i: type of measure has two dimensions: (a) kind of benefit or earnings measure, e. g., SSW, ANNPAYOUT, LC-EARN, etc., and (b) kind of average, i. e., median or mean.
j: 1 ('cohort' 1) or 2 ('cohort' 2)
k: f (full population) or p (population after attrition)
F_i : attrition factor for measure of type i

$F_i = (M_{i,2,f}) / (M_{i,2,p})$

$M_{i,1,f} = F_i (M_{i,1,p})$; the $M_{i,1,f}$ are the 'cohort' 1 measures corrected to 'remove' the effects of attrition.[28, 29]

In effect, we assume that the relative effect of actual attrition on $M_{i,1}$ is the same as the relative effect of 'hypothetical' attrition on $M_{i,2}$. This assumption ignores the fact that mortality was slightly higher for 'cohort' 1 than for 'cohort' 2.

The corrected measures for all participants should be very reliable. The 'cohort' 1 and 'cohort' 2 samples are large and the loss due to 'hypothetical' attrition is only 1.6 percent. For the shared measures shown in Table 1 in the text the adjustment factors all are between .985 and 1.000. For median SSW the factor is .986. For ANNPAYOUT, TX-REPRATE, LC-REPRATE, TX-EARN, and LC-EARN the factors for medians are .996-.998. 'Hypothetical' attriters have much lower SSW than nonattriters ($7,000 versus $126,000) because the great majority of attriters die soon after reaching age 61.

The corrected measures for quintiles shown in Table 4 and Figures 4a-b should also be quite reliable. The quintile samples are sizable. The adjustment factors are .970-.993 for median shared SSW. For the other five shared measures the factors for medians are .989-1.000. For $M_{i,2,f}$ quintiles are determined for the full population; for $M_{i,2,p}$ quintiles are determined for the population after 'hypothetical' attrition.

The attrition corrections for some of the sex-marital status subgroups in Tables 3a-3f are less accurate. The subgroups are sometimes much smaller and the relative loss due to attrition may sometimes be considerably larger. The adjustment factors are .938-.999 for median shared SSW. For the other five shared measures the factors for medians are .96-1.00. For SSW for the never-married our correction process produces a both-sex shared median that lies outside the range of the female and male medians; also for the never-married we get an out-of-range both-sex median for LC-EARN.

[28] $M_{i,2,f}$, $M_{i,2,p}$, and $M_{i,1,p}$ are computed using the weights given in the MINT datafile.
[29] We use the same procedure to get corrected weighted counts of persons in 'cohort' 1.

Appendix C. Growth in Relative Earnings

In order to examine how intercohort growth in LC-EARN compares with the growth in the SSA average annual wage we created an average *relative* earnings measure. Relative "less-censored" earnings for a person for a given year equals the ratio of the person's shared earnings for that year to the SSA average annual wage for that year. Average relative earnings (RLC-EARN) for a person is the average of the annual relative earnings ratios over the person's computation period.

Average RLC-EARN increases as we move from earlier to later near-retiree 'cohorts' (Table C1). That is, average shared "less-censored" earnings increase faster than the SSA economy-wide average annual wage. The increase in median RLC-EARN from the 1988 'cohort' to the 2003 'cohort' is 12 percent; the 1988-1993, 1993-1998, and 1998-2003 increases are 3, 5, and 3 percent. The corresponding increases in mean RLC-EARN are a bit larger.[30]

Is the growth of shared "less-censored" earnings relative to the SSA average annual wage confined to certain stages of the work life? In order to address this question we created average relative earnings measures for four stages of the work life—RLC-$EARN_{22\text{-}31}$, RLC-$EARN_{32\text{-}41}$, RLC-$EARN_{42\text{-}51}$, and RLC-$EARN_{52\text{-}61}$. RLC-$EARN_{i\text{-}j}$ for a person is the average of the annual relative earnings ratios over the period which starts with the year the person reaches age i and ends with the year the person reaches age j. [31]

All four of these additional relative earnings measures increase as we move from earlier to later near-retiree 'cohorts'. The 1988-1998 intercohort increases for median RLC-$EARN_{22\text{-}31}$, RLC-$EARN_{32\text{-}41}$, RLC-$EARN_{42\text{-}51}$, and RLC-$EARN_{52\text{-}61}$ are 17, 15, 2, and 7 percent. Thus, "less-censored" earnings increase faster than the SSA average annual wage in all four stages of the work life, especially for the earlier stages.[32]

Do average individual "less-censored' earnings also grow at a faster percentage rate than the SSA average annual wage? In order to address this question we created an additional average relative earnings measure (IRLC-EARN). IRLC-EARN is computed for individual earnings. We find that average IRLC-EARN also increases as we move from earlier to later 'cohorts'; this applies for medians as well as for means (Table C1).[33]

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[30] Because a person's annual "less-censored" earnings are capped at about 2.45 of the SSA average annual wage and "less-censored" earnings are rising relative to the average annual wage, the intercohort growth rate of uncensored earnings is probably greater than that of "less-censored" earnings.

[31] This definition holds for all persons except those who enter the U.S. after the year they reach age i. RLC-$EARN_{i\text{-}j}$ is not computed for persons who enter the U.S. after year j. For persons who enter the U.S. after year i but during or before year j, RLC-$EARN_{i\text{-}j}$ is the average over the period which starts with the year the person enters the U.S. and ends with year j.

[32] For the 2003 'cohort' a substantial proportion of the annual earnings amounts included in RLC-$EARN_{52\text{-}61}$ are projected rather than reported amounts. The SSA average annual wage series plays a key role in the earnings projection process.

[33] This is true whether the medians and means are for all near-retirees or only for those with positive IRLC-EARNs.

Table C1 shows IRLC-EARN means for all near-retirees ranging from .663 to .778, and medians ranging from .482 to .637. Why are these IRLC-EARN values well below 1.0?

Average IRLC-EARN is for "less-censored" earnings from employment covered by the Social Security program. Through 1977 the SSA average annual wage is for covered wages; after 1977 the percentage growth rate of the SSA average wage is given by the percentage growth rate of average total (covered plus uncovered) wages [Donkar (1981) and Clingman and Kunkel (1992)].

Two reasons all these average IRLC-EARNs are well below 1.0 are the following:

1. These average IRLC-EARNs are for all near-retirees including those with zero earnings for one or more years of their computation periods. The SSA average annual wage for a year is for persons with wages in that year.

2. "Less-censored" earnings exclude earnings about 2.45 times the average annual wage. For all years after 1982 the taxable maximum is close to 2.45 times the average annual wage. The percentage of covered earnings in excess of the taxable maximums rises from 10 percent in 1983 to 15 percent in 2002 (see Table 4.B1 of Social Security Administration (2002)).

Table C1. Average Relative Earnings for 'Cohorts' of Near-Retirees

	'Cohorts'				Percentage Change				
	1988	1993	1998	2003	1988-1993	1993-1998	1998-2003	1988-1998	1988-2003
RLC-EARN									
Median	0.675	0.696	0.730	0.754	3	5	3	8	12
Mean	0.667	0.696	0.740	0.775	4	6	5	11	16
IRLC-EARN (ge 0)									
Median	0.482	0.530	0.591	0.637	10	12	8	23	32
Mean	0.663	0.694	0.735	0.778	5	6	6	11	17
IRLC-EARN (gt 0)									
Median	0.513	0.553	0.609	0.648	8	10	6	19	26
Mean	0.684	0.711	0.748	0.785	4	5	5	9	15
$RLC\text{-}EARN_{22\text{-}31}$									
Median	0.553	0.575	0.647	0.675	4	13	4	17	22
Mean	0.550	0.571	0.634	0.661	4	10	4	15	20
$RLC\text{-}EARN_{32\text{-}41}$									
Median	0.733	0.782	0.841	0.844	7	8	0	15	15
Mean	0.703	0.755	0.811	0.846	7	7	4	15	20
$RLC\text{-}EARN_{42\text{-}51}$									
Median	0.810	0.816	0.828	0.876	1	1	6	2	8
Mean	0.781	0.814	0.848	0.897	4	4	6	9	15
$RLC\text{-}EARN_{52\text{-}61}$									
Median	0.566	0.576	0.607	0.619	2	5	2	7	9
Mean	0.636	0.650	0.680	0.716	2	5	5	7	13

Source: Authors' computations on MINT3 data.

'Cohort' t: Persons aged 57-61 in Year t.

RLC-EARN: Average Relative Shared "Less-Ccensored" Earnings.

IRLC-EARN: Average Relative Individual "Less-Censored" Earnings.

$RLC\text{-}EARN_{i\text{-}j}$: Average Relative Shared "Less-Censored" Earnings, ages i through j.

Appendix D. Size-Adjusted Benefits

Most of the results presented and discussed in the main text are for shared benefits (and shared earnings). For each year a person is married, the person's shared benefit equals the couple's benefits divided by 2; for each year a person is not married, the person's shared benefit equals the person's benefit. That is, the person's shared benefit equals the per capita benefit of the unit (married couple or unmarried person) to which the person belongs.

The results presented and discussed here are for size-adjusted benefits (and size-adjusted earnings). The general view in the economics literature is that there are considerable economies of scale with respect to unit size in the production of economic well-being. Thus, a given per capita or shared benefit contributes much more to the economic well-being of a married person than to that of an unmarried person. The adjustment of benefits for differences in unit size attempts to achieve a situation in which a given size-adjusted benefit contributes the same to the well-being of a married person as to that of an unmarried person. The adjusted benefit measures (ANNPAYOUT and SSW) are cardinal measures of the number of utility units contributed by Social Security benefits to the economic well-being of a person.[34]

Various equivalence scales have used to adjust unit incomes for differences in unit size.[35] We adjust benefits using an equivalence scale implicit in the official U. S. poverty thresholds [Proctor and Dalaker (2003)]. Our equivalence scale is for two types of units—unmarried persons and married couples. We use the equivalence scale derived from the poverty thresholds for (1) unrelated individuals age 65 or over and (2) 2-person units with householder age 65 or over and with no related child under age 18. The equivalence scale values are 1.00 and 1.26 for these two types of units.[36] Thus, the equivalence scale incorporates large economies of scale.[37]

For each year a person is married, the person's adjusted benefit equals the couple's benefits divided by 1.26.[38] For each year a person is not married, the person's adjusted benefit equals the person's benefit. This equivalence scale is also used to compute size-adjusted earnings. The size-adjusted benefit measures (Social Security Wealth, annualized payout, and earnings replacement rates) differ from the shared benefit measures discussed in the first three results sections of the main body of the paper only in

[34] The lump sum dollar amount just sufficient to fund a person's stream of size-adjusted ANNPAYOUTs often will not equal the person's shared SSW.
[35] Perhaps equivalence scales should vary with the level of economic well-being. It can be argued that relative economies of scale with respect to unit size decrease as the level of well-being increases.
[36] For the under 65 the poverty threshold for the 2-person unit is 1.29 times that for the one-person unit. The poverty thresholds for the under 65 are 1.08-1.11 times those for the 65 and over. We decided not to adjust for age differences.
[37] The comparable values in U. S. Congressional Budget Office (2003) tax burden studies are 1.00 and about 1.41.
[38] For each year a person is married, the person's adjusted benefit equals 1.5873 (i. e., 2/1.26) times the person's shared benefit.

the use of adjusted annual benefits and earnings rather than the use of shared annual benefits and earnings.

We will show that the most important effect of size adjustment is to very substantially increase Social Security Wealth and annualized payouts of the married subgroups relative to those of the other marital status subgroups.

Results: All Social Security Program Participants

SSW and ANNPAYOUT: The intercohort percentage increases in average adjusted SSW are the same as or slightly smaller than those for average shared SSW (Tables 1 and D1). In addition, the intercohort percentage increases in average adjusted ANNPAYOUT are the same as or slightly smaller than those for average shared ANNPAYOUT. The smaller increases for these adjusted benefit measures result because beneficiaries in the later cohorts are a bit less likely to be married than those in the earlier cohorts. For example, the percentage of persons married at the beginning of the year they reach age 62 declines from 74.5 percent of the 1988 'cohort' to 71.3 percent for the 2003 'cohort.'

TX-REPRATE and LC-REPRATE: The intercohort percentage changes in median adjusted TX-REPRATE are about the same as those for median shared TX-REPRATE. The median adjusted TX-REPRATEs are 6-7 percent lower than the median shared TX-REPRATEs. This 6-7 percent difference results because size adjustment tends to increase ANNPAYOUT (the numerator of TX-REPRATE) relatively less than it does TX-EARN (the denominator of TX-REPRATE).

The intercohort decreases (increase) in median adjusted LC-REPRATE are a bit larger (smaller) than for median shared LC-REPRATE.

Results: By Sex and Marital Status

Information for the 4 'cohorts' by sex-marital status subgroups is shown in Tables D2a-D2f. Recall that in assigning persons to these subgroups marital status as of the beginning of the year the person reaches age 62 is used. For SSW and ANNPAYOUT the size adjustment mainly affects the married subgroups. For TX-EARN and LC-EARN the size adjustment affects the widowed and divorced subgroups as well as the married subgroups.

SSW: The main effect of size adjustment is to increase median SSW of the married relative to that of the other marital status subgroups. For the three youngest 'cohorts' size adjustment increases SSW of married women and married men by 42-46 percent and 52-53 percent (Table D2a). The percentage increases for the not-married are much smaller. For these same 'cohorts' size adjustment increases SSW of never-married women (0 percent), never-married men (0-4 percent), divorced women (1-2 percent),

divorced men (4-7 percent), and widowed women (0-2 percent) by 7 percent or less; the increase for widowed men (11-22 percent) is larger.

For a person who is married in all of their benefit receipt years size adjustment increases SSW by 58.73 percent. [39] The percentage increases are larger for married men than for married women because these men spend a larger proportion of their benefit receipt years married than do these women. This is primarily because about three-fourths of women outlive their husbands. The increases in SSW of not-married persons are due to their marriages that begin after the start of the year they reach age 62.

For shared SSW we find that in each gender group the ever-married have roughly similar amounts of median SSW. For size-adjusted SSW we get a rather different result. For size-adjusted SSW in each gender group the married have substantially higher SSW than do the widowed and divorced .

The other results for size-adjusted SSW are similar to those for shared SSW discussed in the second results section of the main text.

ANNPAYOUT: The main effect of size adjustment is to increase median ANNPAYOUT of the married relative to those of the other marital status groups (Table D2b). Another effect of size adjustment is to increase ANNPAYOUT of married men relative to that of married women. Size adjustment increases median ANNPAYOUT of married women and married men by 40-41 percent and 54-55 percent. The percentage increases for the not-married are much smaller. Size adjustment increases ANNPAYOUT of never-married women (0-3 percent), never-married men (2-11 percent), divorced women (1-2 percent), divorced men (4-7 percent), widowed women (1-3 percent), and widowed men (7-11 percent) by 11 percent or less. Again the percentage increases are larger for married men than for married women because these men spend a larger proportion of their benefit receipt years married than do these women.

For shared ANNPAYOUT we get the following results:

(1) Median ANNPAYOUT is larger by (4-6 percent) for married women than for married men.
(2) Median ANNPAYOUT amounts are somewhat similar for married, widowed, and divorced women.
(3) Among men, the widowed and divorced show significantly larger ANNPAYOUT amounts than men in the other two subgroups.

For size-adjusted ANNPAYOUT we get the following rather different results:

(1) ANNPAYOUT is smaller (by 4-6 percent) for married women than for married men.

[39] For each year a person is married, the person's adjusted benefit equals the couple's benefit divided by 1.26. The couple's benefit equals 2 times the person's shared benefit. Thus, the person's adjusted benefit equals the person's shared benefit multiplied by 2/1.26, i. e., by 1.5873.

(2) Median ANNPAYOUT amounts are substantially larger for married women than for widowed and divorced women.
(3) Among men, the married receive the largest ANNPAYOUT amounts and the never-married receive the smallest amounts.

The other results for size-adjusted ANNPAYOUT are generally similar to those for shared ANNPAYOUT discussed in the second results section of the main text.

TX-REPRATE: The main effect of size adjustment is to decrease TX-REPRATE of the widowed and divorced relative to those of the never-married and married. Size adjustment decreases median TX-REPRATE of widowed women and widowed men by 28-30 percent and 19-22 percent (Table D2c). The decreases for divorced women and divorced men are 19-24 percent and 17-21 percent. The percentage changes for the never-married and married are small. Size adjustment increases TX-REPRATE of never-married women (0-6 percent), never-married men (2-4 percent), and married men (1-2 percent) by 6 percent or less, and decreases TX-REPRATE of married women by 7 percent.

The effects of size adjustment on TX-REPRATE result from effects on both the numerator and denominator of TX-REPRATE. Recall that the numerator and denominator of TX-REPRATE are ANNPAYOUT and TX-EARN. For the widowed and divorced size adjustment produces small percentage increases in ANNPAYOUT (see above) but quite sizable percentage increases in TX-EARN (Table D2e). For the never-married size adjustment produces small percentage increases in ANNPAYOUT and leaves TX-EARN unchanged. For the married size adjustment produces large percentage increases in ANNPAYOUT and similarly large percentage increases in TX-EARN.

For shared TX-REPRATE we get the following results:

(1) Among women, TX-REPRATEs are highest for widows and are quite similar for the other marital status subgroups.
(2) Among men, TX-REPRATEs are lowest for the married and highest for the widowed and divorced.

For size-adjusted TX-REPRATE we get the following rather different results:

(1) Among women, TX-REPRATEs are lowest for the divorced and similar for the other marital status subgroups.
(2) Among men, TX-REPRATEs are highest for the never-married.

The intercohort changes in size-adjusted TX-REPRATEs are generally similar to those for shared TX-REPRATEs discussed in the second results section of the main text.

LC-REPRATE: The effects of size adjustment on LC-REPRATEs are very similar to those on TX-REPRATEs (Table D2d). Again the main effect of size adjustment is to decrease replacement rates of the widowed and divorced relative to those of the never-married and married.

For shared LC-REPRATE we get the following results:

(1) Among women, LC-REPRATEs are highest for widows and are quite similar for the other marital status subgroups.
(2) Among men, LC-REPRATEs are lowest for the married and highest for the widowed and divorced.

For size-adjusted LC-REPRATE we get the following rather different results:

(1) Among women, LC-REPRATEs are lowest for the divorced and similar for the other marital status subgroups.
(2) Among men, LC-REPRATEs are highest for the never-married.

The intercohort changes in size-adjusted LC-REPRATEs are generally similar to those for shared LC-REPRATEs discussed in the second results section of the main text.

Results: By Earnings Quintiles

Information for the 4 'cohorts' by quintiles of size-adjusted LC-EARN is shown in Table D3.

The percentage increases in ANNPAYOUT due to size adjustment generally rise as we move from lower to higher quintiles. Size adjustment *widens* somewhat the relative spread between lower and higher quintiles. For the 2003 'cohort' size adjustment increases the ratio of top-quintile ANNPAYOUT to bottom-quintile ANNPAYOUT from 2.43 to 2.86 .

The results for shared ANNPAYOUT discussed in the third results section of the main text generally hold for size-adjusted ANNPAYOUT.

Size adjustment reduces median LC-REPRATE for all quintiles in all 'cohorts'. The percentage decreases in LC-REPRATE due to size adjustment generally decline as we move from lower to higher quintiles. This decline is caused by an increase in the percentage increase in ANNPAYOUT as we move to higher quintiles. The decreases in LC-REPRATE for the bottom and top quintiles are 6-11 percent and 3 percent. Size adjustment *narrows* somewhat the spread in LC-REPRATE between lower quintiles and upper quintiles. For the 2003 'cohort' size adjustment increases the ratio of top-quintile LC-REPRATE to bottom-quintile LC-REPRATE from .409 to .425; size adjustment reduces the percentage point shortfall of the top quintile's replacement rate from that of the bottom quintile from 31.2 points to 28.4 points. Thus, it can be said that size adjustment somewhat reduces the measured progressivity of LC-REPRATEs.

The results for shared LC-REPRATE discussed in the third results section of the main text generally hold for size-adjusted LC-REPRATE.

Table D1. Size-Adjusted Social Security Benefit and Related Measures for 'Cohorts' of Near-Retirees

	'Cohort'				Percentage Change				
	1988	1993	1998	2003	1988-1993	1993-1998	1998-2003	1993-2003	1988-2003
SSW ($)									
Median	142,660	165,441	198,953	219,459	16	20	10	33	54
Mean	145,462	168,614	204,664	230,932	16	21	13	37	59
ANNPAYOUT ($)									
Median	7,588	8,595	10,109	11,113	13	18	10	29	46
Mean	7,331	8,291	9,740	10,744	13	17	10	30	47
Median TX-REPRATE (%	30	32	30	29	4	-5	-4	-8	-5
Median LC-REPRATE (%	27	28	28	28	7	-1	-1	-3	4
TX-EARN ($)									
Median	25,318	27,310	33,637	38,094	8	23	13	39	50
Mean	24,426	27,017	33,711	38,695	11	25	15	43	58
LC-EARN ($)									
Median	28,521	30,109	36,384	40,610	6	21	12	35	42
Mean	28,162	30,190	35,843	39,500	7	19	10	31	40
Mean Potential Benefit Years	21	21	22	22	1	2	2	4	5

Source: Authors' computations on MINT3 data.

Note: Money amounts are in January 1, 2002 dollars.

Cohort' t: Persons aged 57-61 in Year t.

SSW: Social Security Wealth.

ANNPAYOUT: Annualized Payout.

TX-REPRATE: Taxable Earnings Replacement Rate.

LC-REPRATE: "Less-Censored" Earnings Replacement Rate.

TX-EARN: Average wage-indexed Taxable Earnings.

LC-EARN: Average wage-indexed "Less-Censored" Earnings.

Table D2a. Median Social Security Wealth (SSW) by 'Cohort', Sex, and Marital Status

'Cohort' and Sex	Marital status at age 62				
	Never Married	Married	Widowed	Divorced	All
1988		**Size-Adjusted ÷ Shared**			
Women					
Men	1.03	1.44	1.01	1.01	1.20
All	0.96	1.52	1.07	1.00	1.49
	1.03	1.49	0.99	1.05	1.35
1993					
Women					
Men	1.00	1.42	1.00	1.02	1.27
All	1.04	1.52	1.11	1.07	1.44
	1.02	1.50	1.01	1.07	1.35
1998					
Women					
Men	1.00	1.45	1.02	1.02	1.27
All	1.02	1.52	1.22	1.04	1.44
	1.01	1.49	1.04	1.02	1.35
2003					
Women	1.00	1.43	1.00	1.01	1.25
Men	1.00	1.53	1.11	1.05	1.42
All	1.01	1.49	1.05	1.04	1.33

Table D2b. Median Annualized Payout (ANNPAYOUT) by 'Cohort', Sex, and Marital Status

'Cohort' and Sex	Marital status at age 62				
	Never Married	Married	Widowed	Divorced	All
		Size-Adjusted ÷ Shared			
1988					
Women	1.00	1.40	1.01	1.01	1.26
Men	1.01	1.55	1.04	1.08	1.49
All	1.00	1.48	1.02	1.01	1.36
1993					
Women	1.00	1.40	1.01	1.01	1.25
Men	1.11	1.55	1.08	1.07	1.47
All	1.01	1.48	1.02	1.03	1.36
1998					
Women	1.00	1.40	1.01	1.02	1.25
Men	1.03	1.54	1.11	1.06	1.46
All	1.03	1.47	1.03	1.05	1.35
2003					
Women	1.03	1.41	1.03	1.01	1.26
Men	1.02	1.54	1.07	1.04	1.43
All	1.01	1.48	1.05	1.02	1.34

Table D2c. Median Taxable Earnings Replacement Rates (TX-REPRATE) by 'Cohort', Sex, and Marital Status.

'Cohort' and Sex	Marital status at age 62				
	Never Married	Married	Widowed	Divorced	All
	Size-Adjusted ÷ Shared				
1988					
Women	1.00	0.93	0.68	0.76	0.87
Men	1.02	1.00	0.80	0.79	0.99
All	1.03	0.97	0.69	0.81	0.93
1993					
Women	1.00	0.93	0.71	0.77	0.88
Men	1.02	1.01	0.80	0.83	0.99
All	1.03	0.97	0.72	0.80	0.93
1998					
Women	1.00	0.93	0.72	0.80	0.89
Men	1.04	1.02	0.81	0.81	0.99
All	1.03	0.97	0.73	0.80	0.93
2003					
Women	1.06	0.93	0.72	0.81	0.89
Men	1.02	1.01	0.78	0.83	0.99
All	1.04	0.97	0.77	0.81	0.94

Table D2d. Median "Less-Censored" Earnings Replacement Rates (LC-REPRATE) by 'Cohort', Sex, and Marital Status.

'Cohort' and Sex	Marital status at age 62				
	Never Married	Married	Widowed	Divorced	All
	Size-Adjusted ÷ Shared				
1988					
Women	1.00	0.93	0.69	0.78	0.86
Men	1.03	1.00	0.78	0.82	0.99
All	1.02	0.96	0.69	0.81	0.92
1993					
Women	1.00	0.92	0.70	0.78	0.86
Men	1.04	1.01	0.79	0.83	0.99
All	1.04	0.97	0.72	0.79	0.93
1998					
Women	1.00	0.92	0.71	0.78	0.88
Men	1.04	1.02	0.76	0.82	0.99
All	1.01	0.98	0.72	0.80	0.93
2003					
Women	1.03	0.94	0.71	0.80	0.89
Men	1.09	1.02	0.74	0.82	0.99
All	1.06	0.98	0.71	0.81	0.94

Table D2e. Median Taxable Earnings (TX-EARN) by 'Cohort', Sex, and Marital Status.

'Cohort' and Sex	Marital status at age 62				
	Never Married	Married	Widowed	Divorced	All
	Size-Adjusted ÷ Shared				
1988					
Women	1.00	1.56	1.49	1.33	1.50
Men	1.00	1.52	1.38	1.33	1.49
All	1.00	1.54	1.46	1.32	1.50
1993					
Women	1.00	1.55	1.42	1.31	1.49
Men	1.00	1.52	1.36	1.39	1.49
All	1.00	1.54	1.41	1.30	1.48
1998					
Women	1.00	1.55	1.45	1.34	1.47
Men	1.00	1.52	1.47	1.28	1.46
All	1.00	1.53	1.43	1.32	1.47
2003					
Women	1.00	1.54	1.46	1.31	1.45
Men	1.00	1.51	1.39	1.29	1.45
All	1.00	1.53	1.40	1.27	1.45

Table D2f. Median "Less-Censored" Earnings (LC-EARN) by 'Cohort', Sex, and Marital Status.

'Cohort' and Sex	Marital status at age 62				
	Never Married	Married	Widowed	Divorced	All
	Size-Adjusted ÷ Shared				
1988					
Women	1.00	1.57	1.50	1.34	1.49
Men	1.00	1.53	1.44	1.37	1.48
All	1.00	1.54	1.46	1.37	1.49
1993					
Women	1.00	1.56	1.44	1.33	1.48
Men	1.00	1.53	1.41	1.32	1.48
All	1.00	1.54	1.44	1.30	1.49
1998					
Women	1.00	1.56	1.45	1.36	1.46
Men	1.00	1.51	1.50	1.31	1.47
All	1.00	1.53	1.44	1.30	1.47
2003					
Women	1.00	1.55	1.45	1.30	1.45
Men	1.00	1.51	1.42	1.26	1.46
All	1.00	1.53	1.39	1.29	1.45

Table D3. Social Security Benefits and Related Measures for 'Cohorts' of Near-Retirees by "Less-Censored" Earnings Quintiles: Ratios of Size-Adjusted Medians to Shared Medians

Quintile	'Cohort' 1988	1993	1998	2003
Size-Adjusted ÷ Shared[1]				
Social Security Wealth				
Bottom	1.31	1.33	1.27	1.28
2nd	1.28	1.32	1.31	1.35
3rd	1.44	1.31	1.34	1.32
4th	1.46	1.44	1.37	1.39
Top	1.43	1.46	1.42	1.40
Annualized Payout				
Bottom	1.27	1.31	1.27	1.25
2nd	1.33	1.31	1.33	1.30
3rd	1.37	1.42	1.37	1.36
4th	1.42	1.43	1.42	1.40
Top	1.45	1.42	1.42	1.41
Taxable Earnings Replacement Rate				
Bottom	0.90	0.89	0.90	0.91
2nd	0.90	0.89	0.92	0.92
3rd	0.93	0.93	0.93	0.93
4th	0.94	0.95	0.95	0.96
Top	0.98	0.97	0.97	0.97
"Less-Censored" Earnings Replacement Rate				
Bottom	0.89	0.90	0.90	0.94
2nd	0.90	0.89	0.92	0.92
3rd	0.92	0.92	0.94	0.94
4th	0.95	0.95	0.96	0.95
Top	0.97	0.97	0.97	0.97
Taxable Earnings				
Bottom	1.43	1.44	1.44	1.36
2nd	1.49	1.45	1.45	1.44
3rd	1.50	1.49	1.47	1.46
4th	1.52	1.50	1.48	1.47
Top	1.47	1.48	1.48	1.45
"Less-Censored" Earnings				
Bottom	1.43	1.44	1.42	1.40
2nd	1.45	1.45	1.46	1.43
3rd	1.49	1.49	1.47	1.45
4th	1.51	1.50	1.48	1.47
Top	1.50	1.49	1.48	1.45

[1]Size-adjusted by size-adjusted earnings quintiles; shared by shared earnings quintiles.